CATALOG DOCUMENTATION
NATIONAL COASTAL ASSESSMENT- NORTHEAST DATABASE
YEAR 2002 STATIONS
SEDIMENT CHARACTERISTICS DATA: "SEDGRAIN"

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1. DATASET IDENTIFICATION

1.1 Title of Catalog document
National Coastal Assessment-Northeast Region Database
Year 2001 Stations
SEDIMENT CHARACTERISTICS DATA

1.2 Authors of the Catalog entry
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1.3 Catalog revision date
August 2007

1.4 Dataset name
SEDGRAIN

1.5 Task Group
National Coastal Assessment-Northeast

1.6 Dataset identification code
005

1.7 Version
001

1.8 Request for Acknowledgment
EMAP requests that all individuals who download EMAP data acknowledge the source of these data in any reports, papers, or presentations. If you publish these data, please include a statement similar to: "Some or all of the data described in this article were produced by the U. S. Environmental Protection Agency through its Environmental Monitoring and Assessment Program (EMAP)".

2. INVESTIGATOR INFORMATION (for full addresses see Section 13)

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2.2 Sample Collection Investigators

Donald Cobb, U.S. EPA NHEERL-AED

2.3 Sample Processing Investigators

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3. DATASET ABSTRACT

3.1 Abstract of the Dataset

The SEDGRAIN data file reports the grain size and total organic carbon (TOC), collected the 2002 NCA program. Only data for the northeastern states (ME through DE) are included here. One record is presented per sampling event.

3.2 Keywords for the Dataset

Percent sand, silt-clay, TOC, Total Organic Carbon

4. OBJECTIVES AND INTRODUCTION

4.1 Program Objective

The National Coastal Assessment (NCA) is a national monitoring and assessment program with the primary goal of providing a consistent evaluation of the estuarine condition in U.S. estuaries. It is an initiative of the Environmental Monitoring and Assessment Program (EMAP), and is a partnership of several federal and state environmental agencies, including: EPA's Regions, Office of Research and Development, and Office of Water; state environmental protection agencies in the 24 marine coastal states and Puerto Rico; and the United States Geological Survey (USGS) and the National Oceanic and Atmospheric Agency (NOAA). The NCA program was initiated in 2000, and known as the Coastal 2000 Program.

Stations were randomly selected using EMAP's probabilistic sampling framework and were sampled once during a summer index period (June to October). A consistent suite of indicators was used to measure conditions in the water, sediment, and in benthic and fish communities. The measured data may be used by the states to meet their reporting requirements under the Clean Water Act, Section 305(b). The data will also be used to generate a series of national reports characterizing the condition of the Nation's estuaries.

4.2 Dataset Objective

The objective of the SEDGRAIN data file is to report the grain size and

percent total organic carbon (TOC) in estuarine sediment collected in 2002.

4.3 Dataset Background Discussion

The grain size and total organic carbon content of sediments are properties that may affect the sediment's ability to bind chemical contaminants. The SEDGRAIN data were measured on the same grabs used to measure chemical and toxicological properties of the sediments, and can therefore be used to help interpret those results.

Massachusetts did not participate in the NCA program in 2002. Rhode Island conducted fish trawls only in 2002; no sedgrain parameters were measured. Connecticut visited only the in-shore stations planned for sampling in 2002; sedgrain parameters were measured.

The moisture content of sediments were measured in previous years of the NCA program (2000 and 2001). However, no moisture analyses were conducted in 2002.

The grain-size parameters are labeled SAND and SILTCLAY because of the strong correlation between size and composition. Particles larger than 63 microns are defined to be sand, while particles smaller than 63 microns are considered to be silt-clay; however, the mineralogical composition of the sediment particles was not analyzed directly.

The State or regional cooperative responsible for sampling, designated ST_COOP, choose to analyze the sediment samples in a state laboratory or submit the samples to a national contract laboratory for analysis (ST_COOP is discussed in the STATIONS metadata document). In 2002, five cooperatives used the national contract lab: ST_COOP = ME, NH, DE, NJ-C, and NJ-DB; two cooperatives analyzed the samples in state labs: NY, and CT; and two cooperatives did not partyicipate in the program in 2002: MA snd RI. The analysis laboratory is identified by the parameter LABCODE (see Section 4.4). The national laboratory used in 2002 was:

Environmental Research Institute
University of Connecticut
Storrs, CT 06269-5210

and:

B&B Laboratories
1902 Pinon
College Station, TX 77845-5816

NCA planners provide two alternate locations for a station location in the event that the original location cannot be sampled. The parameter STA_ALT indicates whether the station location was the original site, first alternate, or second alternate—STA_ALT = "A", "B", or "C", respectively. Also refer to discussion in the STATIONS metadata file regarding use of this parameter during analysis of the data.

4.4 Summary of Dataset Parameters

* denotes parameters that should be used as key fields when merging data files

*STATION	Station name

*STAT_ALT	Alternate Site Code (A, B, C)
*EVNTDATE	Event date
SAND	Grain size of sediment particles, reported as the percent of sediment dry weight that is composed of particles *larger* than 63 microns.
SILTCLAY	Grain size of sediment particles, reported as the percent of sediment dry weight that is composed of particles *smaller* than 63 microns.
TOC	Total organic carbon content in sediment sample (%).
LABCODE	A code identifying the analytical laboratory: CT State lab for CT NY State lab for NY NAT National contract lab for other Northeast states

5. DATA ACQUISITION AND PROCESSING METHODS

5.1 Data Acquisition / Field Sampling

5.1.1 Sampling Objective

Sediment was collected for use in measuring physical, chemical, and toxicological characteristics. Separate sediment grabs were taken for benthic macrofaunal analysis.

5.1.2 Sample Collection: Methods Summary

Sediment was collected with a 0.04-m^2 Young-modified Van-Veen grab or similar sampler. Only the top two centimeters of a grab were retained for physical, chemical, and toxicological analyses. A sufficient number of grabs were processed to provide three liters of the 2-cm composite material. The composite was homogenized and separated into two fractions for storage until analysis. One fraction was frozen and used in the measurement of total organic carbon (TOC) and concentrations of chemical contaminants. The second fraction was chilled but not frozen during storage, and was used for grain-size and toxicity analyses. Separate sediment grabs were taken for benthic macrofaunal analysis.

5.1.3 Beginning Sampling Dates

25 June 2002

5.1.4 Ending Sampling Dates

31 October 2002

5.1.5 Sampling Platform

Samples were collected from gasoline or diesel powered boats, 18 to 133 feet in length.

5.1.6 Sampling Equipment

A 1/25 m2, stainless steel (coated with Kynar), Young-modified Van Veen grab sampler was used to collect sediments.

5.1.7 Manufacturer of Sampling Equipment

Young's Welding, Sandwich, MA

5.1.8 Key Variables

Not applicable

5.1.9 Sample Collection: Methods Calibration

The sampling gear does not require calibration, although it was inspected regularly for damage by mishandling or impact on rocky substrates.

5.1.10 Sample Collection: Quality Control

Care was taken to minimize disturbance to the sediment grabs. Grabs that were incomplete, slumped, less than 7 cm in depth, or comprised chiefly of shelly substrates were discarded. The chance of sampling the same location was minimized by repositioning the boat five meters downstream after three sampling attempts.

5.1.11 Sample Collection: References

Strobel, C.J. 2000. Environmental Monitoring and Assessment Program: Coastal 2000 - Northeast component: field operations manual. Narragansett (RI): U.S. Environmental Protection Agency, National Health and Environmental Effects Research Laboratory, Atlantic Ecology Division. Report nr EPA/620/R-00/002. 68 p.

5.1.12 Sample Collection: Alternate Methods

Different grab samplers used by NCA partners include the Smith-MacIntyre and Ponar grab samplers.

5.2 Data Preparation and Sample Processing

5.2.1 Sample Processing Objective

Sediment samples were analyzed to measure the sediment grain size (reported as either < 63 microns or $\geq$ 63 microns)and the percent total organic carbon (TOC) in sediments collected in the 2001 NCA program (northeastern states).

5.2.2 Sample Processing: Methods Summary

For the grain size analysis, sediments were homogenized and diluted to a suspended slurry with the aid of chemical dispersant, and the suspension passed through a 63 micron sieve. The fine fraction passing through the sieve (<63 micron) and the coarse fraction retained on the filter ($\geq$63 micron) were separately dried and weighed. A small correction to the weight was applied to account for the salt and dispersant residue remaining after evaporation. SILTCLAY was calculated as the salt-free weight of the fine fraction divided by the combined fine plus coarse salt-free weights (the result expressed as a percentage). SAND was calculated as 100% minus SILTCLAY.

For the percent total organic carbon (TOC) analysis, sediment samples were acidified by immersion in 10% HCl to remove inorganic carbonate materials. The dried sediments were oxidized in a muffle furnace at 950 °C in pure O2. The evolved $CO2_2$ gas was integrated, compared to standard curves, and reported as percent organic carbon based on dry weight.

The procedures for these analyses are those developed for the EMAP-Estuaries program and described in "EMAP-Estuaries Laboratory Methods Manual Volume 1- Biological and Physical Analyses" (U.S. EPA, 1995).

5.2.3 Sample Processing: Calibration

The apparatus for TOC measurements was calibrated by combusting standard reference materials, in accordance with standard laboratory procedures.

5.2.4 Sample Processing: Quality Control

Replicate analyses are performed on 10% of samples. Standard materials are included with each batch of TOC analyses.

5.2.5 Sample Processing: References

U.S. EPA. 1995. Environmental Monitoring and Assessment Program (EMAP): Manual-Estuaries, Volume 1: Biological and Physical Analyses. Narragansett, RI: U.S. Environmental Protection Agency, Office of Research and Development, EPA/620/R-95/008.

U.S. EPA. 2001. Environmental Monitoring and Assessment Program (EMAP): National Coastal Assessment Quality Assurance Project Plan 2001-2004. U.S. Environmental Protection Agency, Office of Research and Development, National Health and Environmental Effects Research Laboratory, Gulf Ecology Division, Gulf Breeze, FL. EPA/620/R-01/002. 189 p.

5.2.6 Sample Processing: Alternate Methods

Not Applicable

6. DATA ANALYSIS AND MANIPULATIONS

6.1 Name of New or Modified Values

Not applicable

6.2 Description of Data Manipulation

Not applicable

7. DATA DESCRIPTION

7.1 Description of Parameters

7.1.1 Components of the Dataset

NAME	TYPE	LENGTH	LABEL
STATION	Char	9	Station Identifier
STAT_ALT	Char	1	Station Location (A, B or C)
EVNTDATE	Num	8	Event Date
SILTCLAY	Num	8	Silt/Clay Content (%)
SAND	Num	8	Sand Content (%)
TOC	Num	8	Total Organic Carbon (%)
LABCODE	Char	3	Contract/Lab Identifier

7.1.2 Precision of Reported Values

SAND, SILTCLAY and TOC are reported as percentages to 0.01%. Values are reliable to no more than three significant digits; however more significant digits may be reported in the dataset because of formatting restrictions.

7.1.3 Minimum Value in Dataset

SAND	0.2%
SILTCLAY	0.43%

TOC 0%

7.1.4 Maximum Value in Dataset

SAND	99.57%
SILTCLAY	99.8%
TOC	10.17%

7.2 Data Record Example

7.2.1 Column Names for Example Records

STATION STAT_ALT EVNTDATE SILTCLAY SAND TOC LABCODE

7.2.2 Example Data Records

station	stat_alt	evntdate	siltclay	sand	toc	labcode
CT02-0200	A	9/18/2002	41.6	58.4		CT
CT02-0202	A	8/28/2002	0.2	99.8		CT
CT02-0203	A	9/18/2002	0.6	99.4		CT

8. GEOGRAPHIC AND SPATIAL INFORMATION

8.1 Minimum Longitude (Westernmost)
-75.6977 decimal degrees

8.2 Maximum Longitude (Easternmost)
-67.0482 decimal degrees

8.3 Minimum Latitude (Southernmost)
38.4739 decimal degrees

8.4 Maximum Latitude (Northernmost)
45.1848 decimal degrees

8.5 Name of Region
The National Coastal Assessment Northeast Region covers the northeastern US coastline from Maine to Delaware

9. QUALITY CONTROL AND QUALITY ASSURANCE

9.1 Measurement Quality Objectives
Measure replicate grain size of samples to within a precision of 10% (see USEPA 2001).

9.2 Data Quality Assurance Procedures

9.3 Actual Measurement Quality

10. DATA ACCESS

10.1 Data Access Procedures

Data can be downloaded from the web
http://www.epa.gov/emap/nca/html/regions/index.html

10.2 Data Access Restrictions

None

10.3 Data Access Contact Persons

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10.4 Dataset Format

ASCII (CSV) and SAS Export files

10.5 Information Concerning Anonymous FTP

Not available

10.6 Information Concerning WWW

No gopher access, see Section 10.1 for WWW access

10.7 EMAP CD-ROM Containing the Dataset

Data not available on CD-ROM

11. REFERENCES

Salonen, K. 1979. A versatile method for the rapid and accurate determination of carbon by high temperature combustion. Limnol. Oceanogr. 24: 1770-183.

U.S. EPA. 2001. Environmental Monitoring and Assessment Program (EMAP): National Coastal Assessment Quality Assurance Project Plan 2001-2004. U.S. Environmental Protection Agency, Office of Research and Development, National Health and Environmental Effects Research Laboratory, Gulf Ecology Division, Gulf Breeze, FL. EPA/620/R-01/002. 189 p

U.S. EPA. 1995. Environmental Monitoring and Assessment Program (EMAP): Manual-Estuaries, Volume 1: Biological and Physical Analyses. Narragansett, RI: U.S. Environmental Protection Agency, Office of Research and Development, EPA/620/R-95/008.

12. TABLE OF ACRONYMS

AED	Atlantic Ecology Division
CSC	Computer Sciences Corporation
EMAP	Environmental Monitoring and Assessment Program
EPA	Environmental Protection Agency
NCA	National Coastal Assessment
NHEERL	National Health and Environmental Effects Research Laboratory
QA/QC	Quality Assurance/Quality Control

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